## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| In re application of inventor(s):<br><br>  Martin Olsson et al.<br><br>Application No. 09/954,721<br><br>Confirmation No. 7603<br><br>Filing Date: 12 September 2001<br><br>Title:  **Graphics Engine for High Precision Lithography** | Group Art Unit: 2625<br><br><br>Examiner: Jerome Grant II<br><br><br>**CUSTOMER NO. 22470** |

Commissioner for Patents
P.O. Box 1450
Alexandria, VA  22313-1450

### STATEMENT OF SUBSTANCE OF INTERVIEW

Sir:

In response to an interview on April 23, 2007 and a follow-up telephone call with Examiner Grant on May 3, 2007 Applicants request entry of the following amendments and consideration of the following remarks.  (The corresponding Examiner's Interview Summary states these interview dates as May 23 and May 03.  The first date is incorrect - this interview occurred on April 23.)

The foregoing remarks are substantially the same as those submitted via e-mail to Examiner Grant on May 3, 2007 for use in an Examiner's Amendment.


**Remarks** begin on page 2.

**Appendix** - Suggested Examiner's Amendment, as sent via email to Examiner Grant on May 3, 2007, begins on page 4.

## REMARKS

On April 23, 2007, the Examiner graciously participated in an interview prior to first office action, consistent with the Rule 1.133, to advance prosecution of the application. The interview was conducted by telephone and assisted by WebEx. Prior to the interview, the Examiner identified Shimazu U.S. 5,949,913 as a reference of interest. During the WebEx session, the Shimazu reference, this application and its figures, and U.S. 7,184,192 (issued to the same assignee) were viewed.

The '192 patent was used to identify an environment in which the technology disclosed by this application is particularly useful.

In this application, figures 2, 3, 11 and 14-16 were reviewed. The wording of claim 109 also was reviewed.

It was suggested that the Examiner search other applications that name Tor Sandstrom as an inventor. It also was suggested that graphics card technologies, such as nVidia and ATI graphic card, might be a useful place to look.

Regarding Shimazu '913, we described the technology there as related to detection and correction of defects in multi-tone masks, such as masks used by companies such as Dianippon Printing (DNP) for large area printing of television screens.

In the course of discussing "sub-pixel bar area maps" we indicated to the Examiner a desire for a broadening amendment, to change the term to "sub-pixel area maps".

We understood at the end of the interview that the Examiner would conduct a further search and advise us of the results.

On May 3, we spoke briefly with the Examiner and agreed to submit this authorization for an Examiner's amendment to (1) cancel the withdrawn claims and (2) slightly broaden the claim language to "sub-pixel area maps". Because this is a broadening amendment, we understand that prosecution history estoppel will not attach.

## CONCLUSION

Applicants respectfully submit that the pending claims are now in condition for allowance and thereby solicit acceptance of the claims as now stated.

Should any further details remain outstanding, Applicants would welcome a further discussion with the Examiner. The undersigned can ordinarily be reached at his office at (650) 712-0340 from 8:30 a.m. to 5:30 p.m. PST, Monday through Friday, and can be reached at his cell phone at (415) 902-6112 most other times.

***Fee Authorization.*** The Commissioner is hereby authorized to charge underpayment of any additional fees or credit any overpayment associated with this communication to Deposit Account No. 50-0869 (MLSE 1006-1).

Respectfully submitted,

Dated: August 2, 2007

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## APPENDIX – AUTHORIZATION FOR EXAMINER'S AMENDMENT

**In the claims:**

The following is a list of claims currently pending in this application and their current status. This listing of claims will replace all prior versions and listings of claims in the application:

1-108. (Cancelled by Examiner's Amendment)

109. (Examiner's Amendment) A method of defining an edge of a polygon within an area having sides, the area being subdivided into sub-pixels, including:

providing a plurality of pre-calculated sub-pixel ~~bar~~ <u>area</u> maps corresponding to potential intercepts and orientations of the polygon edge with the sides of the area;

wherein the potential intercepts are limited to discrete positions along edges of the area;

wherein the potential orientations are limited to orientations that connect the discrete positions;

determining two intercepts of the polygon edge with the edges of the area;

determining an orientation of the polygon edge; and

applying one of the pre-calculated sub-pixel ~~bar~~ <u>area</u> maps corresponding to at least one of the two intercepts and the orientation.

110. (Examiner's Amendment) The method of claim 109, further including super-sampling one or more sets of sub-pixels to which one or more of the pre-calculated sub-pixel ~~bar~~ <u>area</u> maps have been applied.

111. (Original) The method of claim 109, wherein the first area is subdivided by no more than 256 sub-pixels and the discrete positions are limited to no more than 65 positions per sub-pixel.

112. (Original) The method of claim 109, wherein the area is subdivided by no more than 64 sub-pixels and the discrete positions are limited to no more than 33 positions per sub-pixel.

113. (Original) The method of claim 109, wherein the area is subdivided into no more than 32 by 16 sub-pixels and there are 17 discrete positions along an edge of the sub-pixel.

114. (Original) The method of claim 109, wherein the area is subdivided into no more than 16 by 8 sub-pixels and there are 9 discrete positions along an edge of the sub-pixel.

115. (Examiner's Amendment) The method of claim 109, wherein the pre-calculated sub-pixel ~~bar~~ area maps are limited to a set of the potential orientations forming a range of approximately 45 degrees and the pre-calculated sub-pixel ~~bar~~ area maps are transformed to cover a range of approximately 180 degrees.

116. (Examiner's Amendment) The method of claim 109, wherein the pre-calculated sub-pixel ~~bar~~ area maps include a combination of the potential orientations forming a range of approximately 45 degrees from one of the potential intercepts across a range of the discrete positions along an edge of one pixel.

117. (Examiner's Amendment) The method of claim 109, wherein the pre-calculated sub-pixel ~~bar~~ area maps are limited to a set of the potential orientations forming a range of approximately 45 degrees from one of the potential intercepts across a range of the discrete positions along an edge of one pixel.

118. (Examiner's Amendment) The method of claim 117, wherein the pre-calculated sub-pixel ~~bar~~ area maps are transformed to cover a range of the potential orientations of approximately 180 degrees.

119. (Original) The method of claim 109, wherein the first and second sides are opposing.

120. (Original) The method of claim 109, wherein the first and second sides are adjacent.

121. (Examiner's Amendment) A method of defining an edge of a polygon within an area having sides, the area being subdivided into sub-pixels, including:

providing a plurality of pre-calculated sub-pixel ~~bar~~ area maps corresponding to potential intercepts and orientations of the polygon edge with the area;

wherein the potential intercepts are limited to discrete positions along the sides of the area;

wherein the potential orientations are limited to orientations that connect the discrete positions;

determining two intercepts of the polygon edge and an extension of the polygon edge with the edges of the rectangular area;

determining an orientation of the polygon edge; and

applying one of the pre-calculated sub-pixel ~~bar~~ area maps corresponding to at least one of the two intercepts and the orientation.

122. (Examiner's Amendment) A method of defining an edge of a polygon within a rectangular area, the rectangular area being subdivided into sub-pixels, including:

providing a plurality pre-calculated sub-pixel ~~bar~~ area maps corresponding to potential intercepts of the polygon edge with the rectangular area;

wherein the potential intercepts are limited to discrete positions along edges of the rectangular area;

determining two intercepts of the polygon edge with the edges of the rectangular area; and

applying one of pre-calculated sub-pixel ~~bar~~ <u>area</u> maps based on the two intercepts.

123. (Examiner's Amendment) A method of defining an edge of a polygon within a rectangular area, the rectangular area being subdivided into sub-pixels, including:

providing a plurality of pre-calculated sub-pixel ~~bar~~ <u>area</u> maps corresponding to potential intercepts of the polygon edge with the rectangular area;

wherein the potential intercepts are limited to discrete positions along edges of the rectangular area;

determining two intercepts of the polygon edge and an extension of the polygon edge with the edges of the rectangular area; and

applying one of the pre-calculated sub-pixel ~~bar~~ <u>area</u> maps corresponding to the two intercepts.

124. (Original) The method of claim 123, further including super-sampling one or more sets of sub-pixels to which one or more of the pre-calculated sub-pixel ~~bar~~ <u>area</u> maps have been applied.

125. (Original) The method of claim 123, wherein two opposing edges of the rectangular area are subdivided by no more than 64 sub-pixels and the discrete positions are limited to no more than 33 positions per sub-pixel.

126. (Original) The method of claim 123, wherein the rectangular area is subdivided into 32 by 16 sub-pixels and there are 17 discrete positions from along one edge of the sub-pixel.

127. (Original) The method of claim 123, wherein the rectangular area is subdivided into 16 by 8 sub-pixels and there are 9 discrete positions from along one edge of the sub-pixel.

128. (Examiner's Amendment) The method of claim 123, wherein the pre-calculated sub-pixel ~~bar~~ area maps are limited to a set of potential orientations between the discrete positions forming a range of approximately 45 degrees and the pre-calculated sub-pixel ~~bar~~ area maps are translated to cover a range of approximately 180 degrees.

129. (Examiner's Amendment) The method of claim 123, wherein the pre-calculated sub-pixel ~~bar~~ area maps include a combination of potential orientations between the discrete positions forming a range of approximately 45 degrees with one of the potential intercepts across a range of the discrete positions along one edge of one sub-pixel.

130. (Examiner's Amendment) The method of claim 123, wherein the pre-calculated sub-pixel ~~bar~~ area maps are limited to a combination of potential orientations between the discrete positions forming a range of approximately 45 degrees with one of the potential intercepts across a range of the discrete positions along one edge of one sub-pixel.

131. (Examiner's Amendment) The method of claim 130, wherein the pre-calculated sub-pixel ~~bar~~ area maps are translated to cover a range of the potential orientations of approximately 180 degrees.

132-166. (Cancelled by Examiner's Amendment)

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